IFW AE 3661

TRANSMITTAL OF APPEAL BRIEF (Large Entity)

Docket No. 1949

In Re Application Of: DUCKECK

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Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
10/018,184	03/15/2002	GIBSON, E.		3661	

Invention: NAVIGATION DEVICE AND METHOD FOR CONTROLLING THE SCALE OF A MAP DETAIL...

COMMISSIONER FOR PATENTS:

Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed on

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Dated: JULY 6, 2004

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MICHAEL J. STRIKER

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cc:

P30LARGE/REV04

UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner: E. Gibson *Art Unit:* 3661

In re:

Applicant: DUCKECK, R.

Serial No.: 10/018,184

Filed: March 15, 2002

BRIEF ON APPEAL

July 6, 2004

Hon. Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Sir:

This is a Brief on Appeal from the final rejection of claims 10-15 by the Primary Examiner.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.
On 7/6/04

Real Party of Interest

The real party of interest in this case is Robert Bosch, GmbH having a business address of Postfach 30 02 20, D-70442 Stuttgart, Germany.

Related Appeals and Interferences

There are no related appeals or interferences known to appellant, the appellant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

The present application contains claims 10-15.

All claims are rejected by the Examiner.

Status of Amendments

The present application contains claims 10-15. In the Final Action of December 10, 2003 all claims were rejected by the Examiner.

Summary of the Invention

The present invention deals with a navigation device and a method for controlling the scale of a map detail shown on its display unit.

A control unit 20 of the navigation device 10 according to the invention includes both the actual navigation computer as well as a display control unit 52, which serves to set the scale of a regional map or road map shown on a display unit 50 of the navigation device 10.

The control unit 20 is connected to means 30, 35, 40, which supply data regarding the position, movement direction, and movement state of the vehicle. For example, these can be a rotation speed sensor 30 which, through the integration via the detected rotation speed changes, can aid in orienting the vehicle in which the navigation device is installed in relation to the cardinal points of the compass. Alternatively, a magnetic compass can also be used to determine the orientation of the vehicle. This can also be an odometer 35 which, for example, detects pulses emitted by wheel sensors of an antilock brake system for vehicle braking and, based on the detected number of pulses and a known wheel circumference, determines a driving distance traveled. Finally, this can also be a GPS (global positioning system) receiver 40 for receiving and evaluating radio signals emitted by GPS satellites, from which the position of the vehicle can be determined. In an

alternative embodiment, the driving distance traveled can also be determined solely based on received satellite signals. It is likewise possible for the signals of the GPS receiver to be used to correct the vehicle position that has been determined based on the signals of the other sensors. In addition, the control unit 20 has a memory 60 connected to it, which stores data of a regional map or road map in digital form. In the current exemplary embodiment, the memory 60 is embodied in the form of a CD ROM drive containing a CD ROM as a data storage device for the map data. However, the memory 60 can also be embodied in the form of a RAM or ROM semiconductor memory.

During the actual navigation process, i.e. while conducting the vehicle driver along a driving route, for example one which has been calculated before the start of the trip, the display unit 50 connected to the control unit 20 displays a map detail which contains the current vehicle position and also the next decision point, e.g. a turning point. In addition, supplementary driving instructions for the vehicle driver can also be displayed, for example in the form of a directional arrow when approaching a decision point, e.g. in the case of imminent turns, and a remaining distance before the turn. Alternatively or in addition to optically displaying driving instructions by means of the display unit 50, an audio output device 55 can

also be provided, which can play audible driving instructions, e.g. "turn right after 100 meters", "now follow the highway", and the like. In addition, the control unit 20 has an input unit 45 connected to it, which has operating elements such as push buttons 47 or other input means, e.g. rotary knobs, for inputting a navigating destination as well as for operating other functions of the device.

The navigation device according to the invention and the navigation method according to the invention function as follows.

After the navigation device 10 is switched on, the sensors 30, 35, 40, namely the rotation speed sensor 30, the odometer 35, and the GPS receiver 40, supply data from which the control unit 20 and/or the navigation computer contained in the control unit determines the current position of the vehicle in which the navigation device according to the invention is installed. Optionally, for the sake of a plausibility test, the control unit also takes into account data from the road map stored in the memory 60 in order to correct the vehicle position calculated based on the sensor data. This type of correction of the determined vehicle position is also known as "map matching". Before, after, or even during the determination of the current vehicle position, the input of a navigating destination area or navigating

destination point is executed in an intrinsically known manner, for example by alphabetically inputting an area or city name and a street name by means of the input unit 45 or for example by marking the destination by means of an indicator that is disposed on a map or road map shown on the display unit 50 and can be controlled using cursor keys. Next, based on the current vehicle position and the destination input by the user and based on the road map data stored in the memory 60, the navigation computer calculates a driving route from the current position to the input destination.

During the actual destination seeking process, i.e. during the driving of the motor vehicle, depending on a respectively current vehicle position as the vehicle position approaches a decision point, for example an intersection, at which according to the calculated driving route, a turn must be made from a road that is currently being driven, driving instructions are generated, which are announced to the vehicle driver optically by means of the display unit 50 or audibly by means of the audio output device 55.

The function of the navigation device according to the invention and the navigation method according to the invention will be explained below with reference to the flowcharts in Figs. 2A and 2B and in conjunction with Figs. 3A, 3B, and 3C. The process begins in step 105 with the actual

destination seeking process, i.e. after the current vehicle position has been determined by means of the sensors 30, 35, and 40, a destination has been input, and a driving route from the current vehicle position to the input destination has been calculated. The vehicle is now located, for example, on a first street 250 which, according to the calculated driving route, is to be driven until it intersects with a second street 270. According to the calculated route, a left turn should be made at the intersection, from the currently driven first street 250 onto the second street 270. The next decision point 215, at which the navigation device issues a driving instruction, is consequently the above-mentioned intersection 215 of the first street 250 and the second street 270. Just before the decision point 215 is reached, the navigation device issues a driving instruction, for example in a form with the approximate content "turn left at the next intersection". In step 110, based on the preset area of the display unit 50 for a map display and the distance of the current vehicle position 210 from the next decision point 215, the display control unit 52 of the navigation device calculates the smallest possible scale at which the map can be shown in which both the current vehicle position 210 and the next decision point 215 can be shown on the display unit 50. The scale is thereby calculated as essentially inversely proportional to the actual distance between the current vehicle position 210 and the next decision point 215 so that the route between the current vehicle

position and the next decision point can be shown in as large a format as possible on the display unit 50. Then in step 115, the map with the calculated scale and the current vehicle position 210, as well as the next decision point 215, is shown on the display unit 50. In the current map scale of Fig. 3A, the map only shows the street 250 currently being traveled, two streets 260 and 270 that cross it, including the second street 270, , as well as the current vehicle position 210 and the decision point 215. The current map scale does not show individual lanes of the streets or how many lanes the streets have. The process continues with step 120. There, a test is made as to whether the previous next decision point 215 has been passed yet and there is a new next decision point. If not, then the process continues with step 125. There, a test is made as to whether a preset distance has been traveled since the last test. If not, then the process goes back to step 120. The map scale is consequently not changed for the time being. Consequently, as long as the next decision point has not been reached and a preset distance has not been traveled, the map scale that is now current is maintained for the present. Thus in the current exemplary embodiment, the driver is spared having to constantly reorient himself in relation to continuously changing maps. In principle, however, it is entirely conceivable to continuously adapt the map scale to the actual distance between the vehicle position and the next decision point.

The preset distance is preferably variable and dependent on the current map scale. In addition, it can also be a function of the type of road, for example expressway, country road, or city street, or can be a function of the road density in the currently traveled area. When driving on an expressway that has a low density of exits, interchanges, or junctions, the preset distance can be on an order of magnitude, for example, of 5 to 10 kilometers; in the downtown zone, it can be on an order of magnitude of down to 10 meters. If it is determined in step 125 that a preset distance has been traveled, then the process reverts to step 110 where a new map scale is calculated. Then, the map is displayed at the newly calculated map scale and a map detail is shown which once more contains both the current vehicle position 210 and the next decision point 215. This situation is shown in Fig. 3B. Since the current vehicle position 210 has come closer to the next decision point 215, a smaller map scale has been selected. The currently smaller map scale permits the depiction of further details such as the several oncoming lanes 251, 252 of the first street 250, the travel-direction lanes 253 and 254 of the first street 250, a first left-turn lane 255 for turning from the first street 250 onto third street 260 crossing it, and a second left-turn lane 256 for turning from the first street 250 onto the second street 270 crossing it, as well as the fact that the first lane 253 in the travel direction ends shortly after the intersection with the third street 260.

The display of the details described above permits the vehicle driver to orient himself so that in order to continue along the calculated driving route starting from the now current vehicle position 210, he preferably gets into the second lane 254 in the travel direction since the first lane 253 in the travel direction ends after the intersection with the third street. The vehicle driver can also orient himself and see that getting into the far left lane 255 in the travel direction would be useless because it is obviously a left-turn lane 255 for turning onto the third street. Finally, the vehicle driver can see from the current map display that as the first street 250 continues after its intersection with the third street 260, it is clearly provided with a left-turn lane for turning onto the second street 270 to follow the calculated driving route 220. If it is determined in step 120 of the process that the next decision point 215 on the driving route 220 has been passed, then the process reverts to step 110 where the new calculation of a scale takes place in order to show the map on the display unit 50 as a function of the actual distance between the current vehicle position and the new next decision point 216. Fig. 3C shows this situation. The vehicle has turned left into the second street 270 according to the driving instructions issued by the navigation device and has thereby passed the decision point 215. The now current vehicle position 210 is on the second street 270 just after the passed decision point 215. The new next decision point 216 marks the point at which a fourth street 280 feeds

into the second street 270 from the right, where a right turn should be made according to the calculated driving route.

Fig. 2B shows a flowchart of a second exemplary embodiment of the method according to the invention, which will be explained next. The process begins in step 150 with the actual destination seeking process, i.e. after the current vehicle position has been determined by means of the sensors 30, 35, and 40, a destination has been input, and a driving route from the current vehicle position to the input destination has been calculated. The vehicle is once again located, for example, on the first street 250, which according to the calculated driving route, is to be followed until an intersection with a second street 270. According to the calculated driving route, a left turn should be made at the intersection from the first street 250 currently being driven into the second street 270. The next decision point 215 at which a driving instruction is issued by the navigation device is consequently the above-mentioned intersection 215 of the first street 250 with the second street 270. Just before the decision point 215 is reached, the navigation device issues a driving instruction, for example in a form with the approximate content "turn left at the next intersection". Then in step 155, the control unit 20, or the display control unit 52 as part of the control unit 20 of the navigation device 10, initially selects the largest possible scale provided

for the map display with which the map can be shown on the display unit 50, containing both the current vehicle position 210 and the next decision point 215. But for the time being, the selected map detail is not shown on the display unit 50.

In another form of this exemplary embodiment, though, the map can also be already shown on the display unit 50 at this point, namely after the largest possible map scale has been set. Then in step 160, based on the preset dimensions of the area available for a map display on the display unit 50 and the distance of the current vehicle position 210 from the next decision point 215, a test is made as to whether the map scale can be reduced by a preset factor, provided that both the current vehicle position and the next decision point can be displayed on the map detail then selected. If so, then in step 165, the map scale is reduced by the preset factor, for example halved, so that for example instead of a scale of 1 : 500,000, a scale of 1 : 250,000 is selected. Other preset map scales for a reduction might include, for example, 1 : 100,000, 1 : 50,000, 1 : 25,000, 1 : 10,000, 1 : 5,000, 1 : 2,500, 1 : 1,000. Alternatively, though, a respective reduction by a factor of, for example, approximately 4, v2, or ^{4}v2 is also possible. Then, the process moves to step 160, where a test is once again made as to whether the map scale can be further reduced by the preset

factor. In this manner, the map scale is successively reduced as long as both the current vehicle position 210 and the next decision point 215 along the calculated driving route 220 can be shown in the selected map detail. Finally, if a determination is made in step 160 that it is not possible to further reduce the map scale while simultaneously being able to display both the current vehicle position 210 and the next decision point 215 on one and the same map detail, then in step 170, the map detail is displayed on the display unit 50 of the navigation device 10 at the smallest possible previously determined map scale, at the predetermined resolution, as shown by way of example in Fig. 3A.

Then a test is made in step 175 as to whether the next decision point 215 has been passed in the meantime. If not, then the process reverts back to step 160 where a test is once again made as to whether in the meantime, it is possible to further reduce the map scale by a predetermined measure, while simultaneously being able to display both the current vehicle position 210 and the next decision point 215 at the reduced map scale on the display unit 50. This is the case, for example, if the vehicle on the first street 250 has come a certain distance closer to the next decision point 215 along the calculated driving route 220. Then in step 165, the map scale is reduced by a preset amount. If it is not possible to further reduce the map scale at

this point, then in step 170, the map detail is displayed at the reduced map scale, as shown by way of example in Fig. 3B. Otherwise, if it is no longer possible to reduce the map scale in step 160, then in step 170, the map detail is shown at an unchanged map scale. If it is determined in step 175 that, as in the situation in Fig. 3B, the next decision point 215 has been passed, then in step 155 the largest possible map scale is once again selected for the time being and then is successively reduced in the manner described above to the smallest scale that permits a simultaneous display of both the current vehicle position 210 and the new next decision point 216.

In another form of the second exemplary embodiment, instead of an abrupt enlargement of the map scale to a maximum value, it can also be respectively enlarged by a preset value until both the current vehicle position 210 and the next decision point 216 can be shown at the smallest possible scale on the same map detail.

<u>Issues</u>

In the Final Office Action claims 10, 11 and 15 were rejected under 35 U.S.C. 102(b) as being anticipated by the patent to Koizumi, et al.

Thus, the first issue on appeal is whether the above listed

claims can be considered as anticipatable over this reference in the sense of 35 U.S.C. 102(b).

Claims 12-14 were rejected under 35 U.S.C. 103(a) over the patent to Koizumi in view of the patent to Takanabe, et al.

Therefore, the second issue on appeal is whether claims 12-14 can be considered as being unpatable over the combination of the above mentioned references in the sense of 35 U.S.C. 103(a).

<u>Grouping of Claims</u>

Claim 10 which is the broadest method claim in the present application and claim 15 which is the broadest apparatus claim in the present application are separately patentable.

As for claims 11-14 these claims depend on claim 10, they share its presumably allowable features, and they stand and fall together with claim 10.

<u>Argument</u>

First of all, it is to believed to be advisable to analyze the

anticipation rejection of the claims applied by the Examiner and based on the patent to Koizumi. The present invention as defined in claims 10 and 15 clearly and patentably distinguishes from the prior art applied by the Examiner, including the patent to Koizumi. In order to support this statement, applicant wishes to explain the subject matter of the present invention.

The objective of the present invention is to provide the vehicle driver with an improved orientation during guiding him to a target. In accordance with the present invention as defined in claim 10 a route between the actual position and the next decision point is presented on the display with a maximum possible format filing. A decision point in the sense of the applicant's invention is a point on the calculated driving route, on which a driving instruction, for example a turning point, must be given to the vehicle driver. The improved orientation is obtained in that, with increasing approaching of the decision point, increasingly details are shown on the indicated map, for example all driving tracks of a street on which the vehicle drives, or eventually turning tracks, so that the vehicle driver can be oriented for a turning process for example preliminarily to a corresponding driving track. The improved orientation is further provided in that always both the actual vehicle position and also the next decision point and thereby the

driving distance between these both points are shown on the display.

The patent to Koizumi also sets an objective of an improved orientation for the vehicle driver during driving to a target. However, this objective is achieved with different means. A core problem in the patent to Koizumi is to represent decision points when they are located in the region of complex intersections or circular traffic.

In the detailed description in column 6, lines 23-46, and further in the parts indicated by the Examiner, in particular column 18, lines 8-16 and 36-43 it is specifically stated that during approaching of the vehicle under a predetermined threshold value to such an intersection, the total intersection must be represented on an enlarged scale. The representation scale is selected so as to provide a complete intersection situation on the display. In accordance with the patent to Koizumi this is especially important for complex intersections "or traffic circle" to provide an easy orientation for the driver. The zoomed representation is selected when the vehicle approached the intersection with a predetermined distance from it. In the further cited passage in particular column 25, lines 55-57 it is again indicated that the zoom intersection representation also illustrates the actual vehicle location and the decision point.

The display scale is selected. First of all, it is here provided that the vehicle location and the next decision point must always be seen together on the display. In the patent to Koizumi this criterium is not always required.

Furthermore, the representation scale as defined in claim 10 is always adapted so that the route between the vehicle location and the next decision point is always represented on the display in a format-filling way. This is also not disclosed in the patent to Koizumi. In particular, the description in column 25, lines 55-57 in the patent to Koizumi can not interpret it in this way. Moreover, it is there clearly stated that when the intersection is represented in a format-filling manner, simultaneously also the vehicle position and the decision point are indicated.

A person skilled in the art with this teaching before him would not be able to arrive at the solution in which the scale of the representation always is adapted so that both points are shown on the display simultaneously. The way of solving the problem is here obviously completely different.

Finally, in contrast to the patent to Koizumi the method defined

in claim 10 does not deal with a complete next intersection situation, but instead always shows <u>the next decision point</u> and the vehicle location. It is believed to be completely clear that the situation described in the example disclosed in the patent to Koizumi for a vehicle traffic or a complete intersection situation is completely different from the subject matter of the present invention. While Koizumi always displays the complete intersection situation on the display, in accordance with the present invention only the next turning point for driving is indicated.

It is believed to be clear that the patent to Koizumi discloses a method which deals with solution of a similar problem as in the applicant's invention. However, the solution proposed in the patent to Koizumi is completely different from the solution disclosed in the present patent application.

It is therefore believed that the method for controlling the scale of a map detail in accordance with the present invention as defined in claim 10 is completely different from the method disclosed in the patent to Koizumi and can not be derived from this reference as a matter of obviousness. The same is true for the apparatus defined in claim 15.

The Examiner rejected the claims over this reference as being anticipated. In connection with this, it is believed to be advisable to cite the decision in re Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 221 USPQ 481, 485 (Fed. Cir. 1984) in which it was stated:

> "Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim."

Definitely, the patent to Koizumi does not disclose all features of the method of the present invention arranged as in claims 10 and 15, and also with their specific interaction and interjunction.

It is therefore believed that the anticipation rejection should be considered as not tenable with respect to claims 10 and 15.

The patent to Takanabe also does not teach the new features of the present invention. This reference proposes that always the route between the actual location of the vehicle and the destination provided by the user of the actual trip should be shown in the greatest possible dimensions. The input destination, however, is not comparable with the next decision point, as defined in the present invention. Takanabe corresponds essentially with the state of art described in the specification of the present application,

but this reference does not disclose the new features of the present invention as defined in claims 10 and 15.

The Examiner rejected some claims as being obvious over the combination of the patents to Koizumi and Takanabe. None of the references, as explained herein above, teaches the new features of the present invention as defined in claims 10 and 15. Therefore, the combination of the references would not lead to the applicant's invention. Instead, in order to arrive at the applicant's invention from the references, the references have to be fundamentally modified. However, it is known that in order to arrive at a claimed invention, by modifying the references the cited art must itself contain a suggestion for such a modification.

This principle has been consistently upheld by the U.S. Court of Customs and Patent Appeals which, for example, held in its decision in re Randol and Redford (165 USPQ 586) that

> Prior patents are references only for what they clearly disclose or suggestion; it is not a proper use of a patent as a reference to modify its structure to one which prior art references do not suggest.

Definitely, the references do not provide any hint or suggestion for such modifications.

In view of the above presented remarks it is believed that the first issue on appeal is whether the claims are rejectable as anticipated by the patent to Koizumi should be resolved by reversing the Examiner's anticipation rejection.

As for the second issue on appeal whether the claims are patentable as being obvious over the combination of the two references, it is also believed that this rejection should be reversed as well.

Allowance of the present application with all the claims currently on file is most respectfully requested.

Respectfully submitted,

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APPENDIX

10. (Previously presented) A method for controlling the scale of a map detail shown on a display unit of a navigation device, comprising the steps of setting the scale of the map detail displayed as a function of the distance of a current vehicle position from a next decision point located between the current vehicle position and a navigation destination that relates to a driving instruction, which has been issued or is to be issued based on a calculated driving route; setting the scale of the map detail displayed in such a way that both the current vehicle position and the next decision point located between the current vehicle position and a navigation destination are shown on the display; displaying the route between the current vehicle position and the next decision point located between the current vehicle position and a navigation destination in a scale that is the largest possible for the display unit.

11. (original) The method according to claim 10; and further comprising setting the scale of the map detail in such a way that a predetermined surrounding area around the current vehicle position and/or the next decision point can be shown on the display.

12. (original) The method according to claim 10; and further comprising the scale of the map display to be essentially inversely

proportional to a distance between the current vehicle position and the next decision point.

13. (original) The method according to claim 10; and further comprising increasing the scale of the current map detail in preset stages as the vehicle position approaches the next decision point.

14. (original) The method according to claim 10; and further comprising setting the scale of the map detail display, when the current vehicle position has reached the decision point, with a decision point which is then next.

15. (Previously presented) A navigation device comprising a display unit for showing a map detail; a control unit for setting the scale of the map details display, said control unit setting the scale of the map detail display as a function of a distance of a current vehicle position from a next decision point located between the current vehicle position and a navigation destination that relates to a driving instruction which has been issued or is to be issued based on a calculated driving route, said control unit setting the scale of the map detail display in such a way that both the current vehicle position and the next decision point located between the current vehicle position and a navigation destination are shown on the display, said control

unit setting the scale of the map detail displayed in such a way that the route between the current vehicle position and the next decision point located between the current vehicle position and a navigation destination is displayed in a scale that is the largest possible for the display unit.